

Mountain Beavers

Mountain beavers (*Aplodontia rufa*, Fig. 1) are considered by many taxonomists to be the world's most primitive living rodent species. They are not really beavers, but were so named because they gnaw bark and cut off limbs in a manner similar to true beavers.

Mountain beavers live in moist forests, on ferny slopes, and are occasionally found in damp ravines in urban areas. Their worldwide range is the coastal lowlands and coastal mountains of southern British Columbia (from the Fraser Valley to the Cascade mountains), western Washington, western Oregon, and south into California.

Most people don't know mountain beavers exist and some still continue to question that fact even after they've heard about the animals.



Figure 1. Mountain beavers, also called boomers, are 12 to 14 inches long and resemble large, overgrown hamsters or tailless muskrats. They have small ears and eyes, short, rudimentary tails, and large curved front claws that are used for digging, grasping, and climbing.

(From Christensen and Larrison, *Mammals of the Pacific Northwest: A Pictorial Introduction*.)

Facts about Washington's Mountain Beavers

Food and Feeding Habits

- Mountain beavers are herbivores and eat a wide variety of plants.
- Food items include all above and below-ground parts of ferns, salal, nettles, fireweed, bleeding heart, salmonberry, brambles, dogwoods, vine maples, willows, alders, and conifers. Mountain beavers also eat rhododendrons and other ornamental perennials, shrubs, and trees.
- Food items are eaten on site, temporarily stored outside burrow entrances, or placed in caches inside burrow systems (Fig. 4).
- Mountain beavers will climb into trees to lop off living branches that are up to 1 inch in diameter.
- Mountain beavers have primitive, inefficient kidneys and must drink 1/3 of their body weight in water every day.

Burrow System

- Mountain beavers dig tunnels 6 to 8 inches in diameter throughout their territories, which may be 2 acres or more, depending on food and cover availability, and population density.
- Tunnel systems, or burrow systems, are located in or near thick vegetation, and tend to radiate out from a nest site (Fig. 2). Mountain beavers have been found using tunnels that are 10 feet underground.
- Burrow systems may contain ten or more exits and special chambers for nesting, feeding, storing food, and storing droppings.
- Unoccupied mountain-beaver tunnels and chambers are used by mice, moles, voles, rats, cottontail rabbits, weasels, mink, spotted skunks, and salamanders.

Reproduction

- Mountain beavers are solitary except during the breeding season.

- Breeding takes place from February to April.
- Two to four young are born after a 28- to 30-day gestation period.

Mortality

- Mountain beavers are eaten by bobcats, coyotes, large owls, and occasionally cougars and bears. Weasels and mink (primarily large males) eat young mountain beavers.
- Large numbers of mountain beavers are often trapped to prevent damage to newly seeded or planted commercial forests.

Viewing Mountain Beavers

Mountain beavers are abundant and active year-round, yet they are seldom observed due to their subterranean existence. Although active on and off throughout a 24 hour period, they are only occasionally seen wandering around on the ground or climbing in trees during daylight hours. They find the majority of their food and water within 150 feet of their burrows.

Mountain beavers have various calls; the most frequent is a chattering produced by gnashing the tips of the lower and upper front teeth. This indicates irritation and at close range is best heeded, because mountain beavers have sharp teeth and can be swift, vicious biters if cornered (Fig. 3).

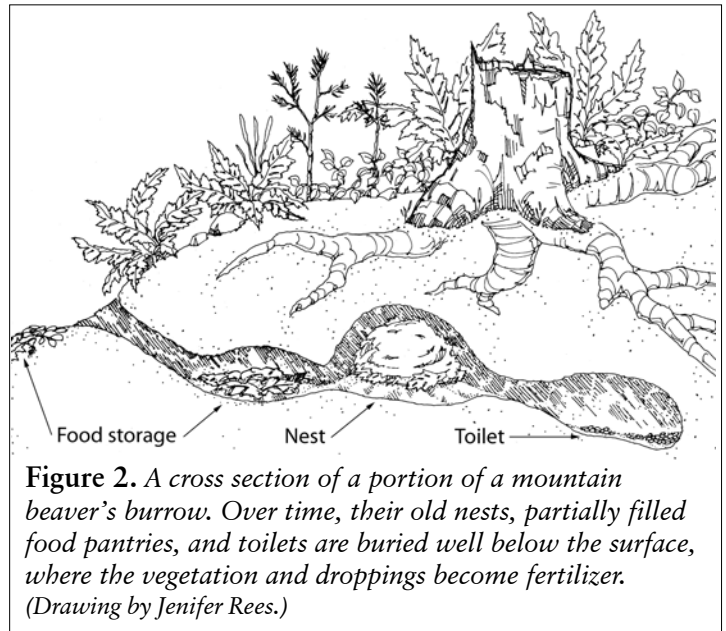


Figure 2. A cross section of a portion of a mountain beaver's burrow. Over time, their old nests, partially filled food pantries, and toilets are buried well below the surface, where the vegetation and droppings become fertilizer. (Drawing by Jenifer Rees.)

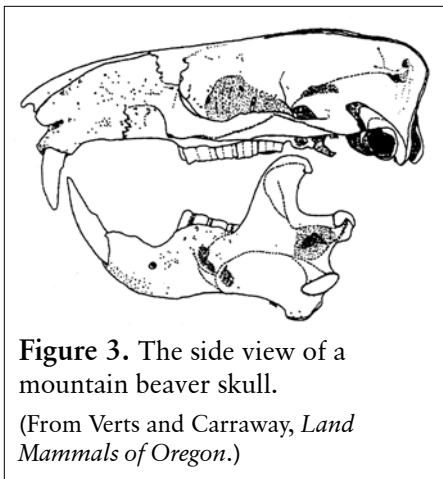


Figure 3. The side view of a mountain beaver skull. (From Verts and Carraway, *Land Mammals of Oregon*.)

Active Burrow Systems

Active systems are most evident during the late spring and summer months when most of the digging and repairing is done. Look for newly excavated soil (sometimes called a "kick out") or freshly cut vegetation next to or within the entrance of a 6- to 8-inch diameter hole (Fig. 4). The presence of a mountain beaver (or other mammals using its tunnel system) can be recognized by the worn appearance of the tunnel floor and a lack or scarcity of spiderwebs at tunnel entrances.

In addition, after foraging above ground, mountain beavers carry or drag cut vegetation, which may vary in length from a few inches to several feet, to the

burrow. There the material is cut into short sections at the burrow entrance and carried into the burrow to be eaten, stored, or used as nesting material. "Haystacks" of drying vegetation may be found near their burrows.

To check for occupants, you can install a temporary obstruction in the tunnel entrance. Cut three or four small-diameter (1/4-inch) wide, 18-inch long woody stems and insert them vertically at the exits of several burrows. If mountain beavers are present, the inserted stems will be pushed aside or clipped within a few days. Their musky odor may also be noticeable.



Figure 4. A sure sign of mountain beaver is freshly cut vegetation next to or within the entrance of a 6- to 8-inch diameter hole. (Drawing by Jenifer Rees.)

Feeding Sites

Look for signs of clipped twigs and branches and stripped bark on shrubs and trees.

Seedlings less than 1½ inch in diameter are most often eaten. These are usually clipped off at or close to ground level, making signs of activity difficult to locate and invisible when covered by soil, vegetation, or debris.

Multiple bites on the clipped plant can create a serrated edge, but more often a clean, slanted cut similar to those made by rabbits, hares, voles, and other rodents is evident.

On small trees and large seedlings, the side branches are frequently clipped off high in the tree, leaving 1- to 3-inch stubs. (To distinguish mountain beaver activity from that of porcupines, note that mountain beavers eat from the bottom up and porcupines eat from the top down.)

Feeding activity on the roots of trees may cause trees to lean at odd angles or develop a curved trunk. Eating roots and/or bark may also kill the trees. Often, the foliage of injured conifers remains green during the first year, but the needles turn reddish brown during a relatively brief defoliation period the following summer. The defoliated skeletons of these trees may remain standing and visible for many years, becoming excellent habitat for the birds and mammals that use such trees.

Tracks

Mountain beavers are generally slow-moving animals so they leave a trail of closely spaced tracks (Fig. 5). Look for tracks near active burrows. The imprints, in mud, show distinctively long and slender toes that are not apt to be confused with those of any other animals.

Droppings

Mountain beaver droppings are seldom seen because they are normally deposited inside the burrow system. If you find droppings, they are probably from another animal using the burrow.

Mountain beaver re-ingest their soft droppings, much as rabbits do, and store their hard droppings in underground chambers.

Preventing Conflicts

Mountain beavers serve an important function in nature owing to the amount of soil they move and the number of vacant burrows they leave behind for other wildlife. Over time, their old nests, partially filled food pantries and toilets, are buried well below the surface, where the vegetation and droppings become fertilizer.

Most people would not tolerate problematic mountain beavers on their commercial property because of the logical concern that leaving them alone would lead to more damage. When they are feeding in Christmas tree farms, commercial timber farms, and other commercial operations, this may be true. For the homeowner, however, mountain beavers are more of an occasional nuisance in the landscape or garden, not a long-term problem or threat. There are of course, exceptions.

If the burrowing activity of mountain beavers is causing problems for livestock in pastures or undermining roadbeds, irrigation ditches, and earthen dams, see the handout on Muskrats for prevention strategies. Mountain beavers occasionally will get caught in window wells. See the handout on Skunks for information.

While you may be able to remove an existing mountain beaver population or force them elsewhere, if suitable conditions exist and mountain beavers occur nearby, others will eventually move into vacated areas. In addition, it is important to understand that mountain beaver problems rarely can be resolved by a quick fix method, but that a continuing commitment to whatever solutions are adopted is required.

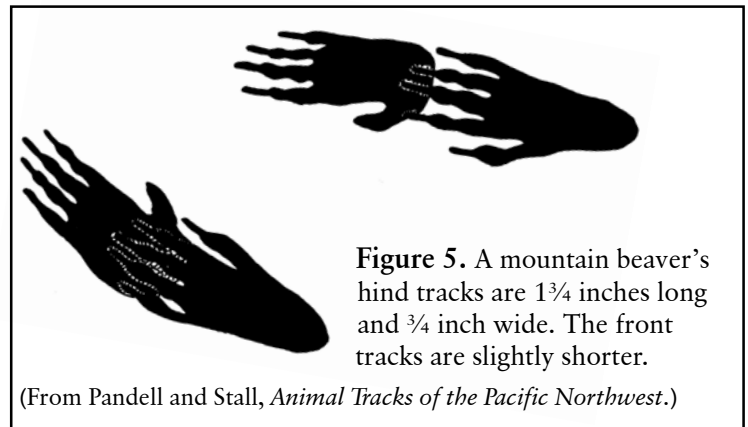


Figure 5. A mountain beaver's hind tracks are 1¾ inches long and ¾ inch wide. The front tracks are slightly shorter.

(From Pandell and Stall, *Animal Tracks of the Pacific Northwest*.)

To prevent conflicts or remedy problems:

Harass mountain beavers in their burrows. Becoming a “bad neighbor” *may* cause a mountain beaver to leave an area, especially if it hasn’t lived there long. Fill all existing and new tunnel entrances with dirt, rocks, or wadded up newspaper. Some people have had success using freshly used cat litter in this way.

In addition, you can roll rags into tight balls the size of tennis balls and tie them with twine. Sprinkle predator urine (mink, coyote, or bobcat—available from trapper supply outlets and over the Internet) or ammonia on these. Using a piece of stiff wire, such as an opened clothes hanger, put the rag balls into the burrow as far as you can and cover the hole lightly with dirt or wadded newspaper.

Harass the mountain beaver *daily* for as long as necessary, and don’t be surprised if it takes a couple of weeks for the animal to leave.

Where mountain beavers are well established, their systems are extensive and flooding with a garden hose is unlikely to disperse the animals.

When attempting to flood out a mountain beaver, concentrate the effort in late winter, before mountain beavers give birth. Be careful when attempting to flood out a mountain beaver near a building; doing so could damage the foundation or flood the basement or crawl space.

Install fences and other barriers. In areas where individual small trees or shrubs are being damaged, surround the plants with 24-inch tall smooth metal cylinders (Fig. 6). To prevent mountain beavers from climbing larger plants to access upper branches, install a barrier (Fig. 7)

Multistemmed trees, large shrubs, and groups of plants can be enclosed in a mini floppy fence made from wire mesh (Fig. 8), silt fencing, plastic weed mats, or a similar smooth material. Mountain beavers have well-developed senses of smell, touch, and taste. However, they have poor eyesight, and this barrier should prevent them from finding the trees and shrubs. If they attempt to climb the fence, its tendency to flop will keep the animals from reaching the top.

A floppy fence can also be constructed as a barrier between an active mountain beaver colony and a large area needing protection. To prevent mountain beavers from walking around the fence, connect each end to an existing, impenetrable solid fence or structure.

To prevent the mountain beaver from digging under the fence, keep a 2-foot wide wire apron on top of the ground on the mountain beaver’s side of the fence. Keep the apron flush to the ground with rocks and/or stakes, or the mountain beaver will shimmy under it.

An alternative to the floppy fence is a fence made of electrified netting, of the type used to exclude rabbits. Electrified netting is available from some farm supply centers and off the Internet.

Small areas that need protection from burrowing mountain beavers can be covered with a 6-inch layer of gravel or 1-inch wire mesh laid over the area and anchored to the ground.

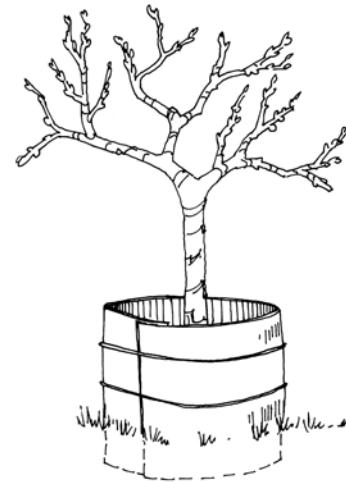


Figure 6. Eighteen-inch lengths of stovepipe or aluminum flashing can be placed around tree trunks to keep mountain beavers from accessing the bark and branches. The smooth-sided barriers can be held together with a top and bottom wire and painted to blend into the landscape.

(Drawings by Jenifer Rees.)

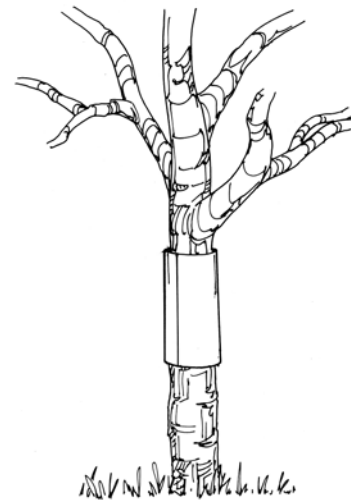


Figure 7. A guard can be secured around trees, pipes, posts, and other structures to keep mountain beavers from climbing. A barrier can be made from a piece of aluminum flashing or sheet metal, 18 inches wide and as long as the circumference of the support (allow plenty of material for the overlapping seam and tree growth). The barrier can be held together with wire, nails, or screws, and painted to blend in.

Repellents and Fumigants

Repellents applied to plants have not proven consistently effective; new products are currently being tested.

Fumigants of all types have been tried and are generally ineffective, probably because of mountain beavers' maze of tunnels, and their ability to quickly close off entrances.

Trapping and Lethal Control

Because mountain beavers are territorial, removing them from an area may appear to solve the problem. However, other mountain beavers will eventually enter the area if attractive habitat is available.

Long-term control is possible by first reducing or eliminating the mountain beaver population by trapping, and then continuing with a maintenance-trapping program to remove invading animals as they become evident.

Mountain beavers can be trapped anytime, but for best results and for humane reasons it is best to concentrate the effort in late winter, before they give birth (see "Legal Status").

A wildlife damage control company can be hired to do the trapping, or you can do it yourself (see the handout, "Hiring a Wildlife Damage Control Company"). Never attempt to handle trapped or wild mountain beavers. They are capable of producing a very bad bite and have very sharp claws.

For information on moving, trapping, and euthanizing mountain beavers, see the handout "Trapping Wildlife."

Public Health Concerns

Mountain beavers are not considered a significant source of any infectious disease that can be transmitted to humans or domestic animals. Anyone handling a living or dead mountain beaver should wear rubber gloves, and wash his or her hands well when finished. Although the largest flea (*Hystrichopsylla schefferi*) in the world—it is up to ¼ inch long—is found on mountain beavers and in their burrows, it does not bother humans.

Legal Status

The mountain beaver is unclassified and may be trapped or killed year-round without a permit. Although no special trapping permit is necessary for the use of live traps, a special trapping permit is required for the use of all traps other than live traps (RCW 77.15.192, 77.15.194; WAC 232-12-142). There are no exceptions for emergencies and no provisions for verbal approval. All special trapping permit applications must be in writing on a form available from the Department of Fish and Wildlife.

It is unlawful to release a mountain beaver anywhere within the state, other than on the property where it was legally trapped, without a permit to do so (RCW 77.15.250 and WAC 232-12-271).

Because legal status, trapping restrictions, and other information about mountain beavers change, contact your local Fish and Wildlife office for updates.

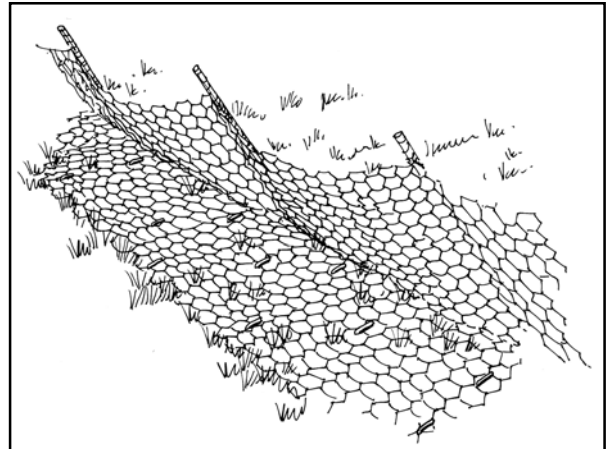


Figure 8. A mini floppy fence constructed of 1-inch mesh wire or heavy plastic needs to be at least 2 feet high and staked so that it's wobbly. The fence should not be pulled tight between the stakes, but rather there should be some "give" so that when the mountain beaver tries to climb the fence, it will wobble, discouraging further climbing. Constructing the fence so that it leans slightly toward the mountain beaver's side will increase its effectiveness.

(Drawing by Jenifer Rees.)

Additional Information

Books

Maser, Chris. *Mammals of the Pacific Northwest: From the Coast to the High Cascades*. Corvallis: Oregon State University Press, 1998.

Verts, B. J., and Leslie N. Carraway. *Land Mammals of Oregon*. Los Angeles: University of California Press, 1998.

Internet Resources

Burke Museum's Mammals of Washington

<http://www.washington.edu/burkemuseum/collections/mammalogy/mamwash/mamwash.html#rodentia>

Internet IPM Resources on Vertebrate Pests (Oregon State University)

www.ippc.orst.edu/cicp/Pests/vertebrate.htm

Mountain Beaver Journal

<http://infowright.com/mtbeaver/>

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